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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/527,219

05/19/2005

Akihiko Ohta

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EXAMINER

KERNS, KEVIN P

ART UNIT

PAPER NUMBER

1725

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

04/23/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/527,219

Applicant(s)

OHTA ET AL.

Examiner

Kevin P. Kerns

Art Unit

1725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 March 2005 and 16 March 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 3/9/05.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 5-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to amended claims 5 and 6, these method claims are generally written in a narrative format, rendering the claims indefinite. These method claims should be written to distinctly set forth positive, active process steps. In its current form, the only "step" in claims 5 and 6 is the vague phrase "is performed to induce".

With regard to independent claim 5, the phrase "without heat history that is alternation of heating and cooling during the additional welding" is unclear. Are "heat history" and "alternation of heating and cooling" the same? Does "that is" have the same meaning as "or"? If so, the applicants are suggested to remove either of these limitations to clarify claim 5, but preferably to remove the limitation "heat history" -- rather than repeating a definition of "heat history" to mean "alternation of heating and cooling".

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 5-8 insofar as definite (in view of the 35 USC 112, 2nd paragraph rejections) are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 3010211 in view of JP 54-130451 (complete translation provided with this Office Action).

JP 3010211 discloses an arc welding method using a shielding gas of rare gas (argon) mixed with oxygen (e.g. 98% argon and 2% oxygen) for repair welding of a welding material for a horizontal annex 2 to a vertical member (see Figure 1) having a low transformation temperature (martensite transformation expansion at room temperature where the welding is complete or in its vicinity – page 2, 4th full paragraph of translation), such that the repair welding is controlled to avoid cracking (avoiding “heat history”, or “alternation of heating and cooling”) via control of welding temperature and other welding parameters (abstract; pages 2-4 of translation; and Figures 1-5). JP

3010211 does not specifically disclose the avoidance of "heat history", or "alternation of heating and cooling" during the step of "additional" welding (i.e. depositing an additional weld layer on a "pre-existing" weld bead).

However, JP 54-130451 discloses a method of reducing residual stress at a welded joint of a steel workpiece, in which the method includes the step of welding a final (additional) layer of deposited metal using an austenitic metal at an upper side to a lower side of a side face of the workpiece (Figures 2-4) to form a substantially linear weld line (Figure 4), followed by cooling to a temperature (room temperature or lower – see paragraph under "2. Claim" on page 1 of the translation) to cause martensitic transformation, such that the step of additional welding is advantageous for avoiding shrinkage of the deposited metal by the expansion due to transformation from austenite into martensite, thus reducing embrittlement and residual stress at the weld zone (abstract; pages 1-4 of translation; and Figures 1-4).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the arc welding method disclosed by JP 3010211, by using the method of reducing stress by welding an additional layer while avoiding "heat history", or "alternation of heating and cooling", as taught by JP 54-130451, in order to avoid shrinkage of the deposited metal by the expansion due to transformation from austenite into martensite, thus reducing embrittlement and residual stress at the weld zone (JP 54-130451; abstract; page 1, 4th and 5th lines from the end of the page of the translation; and page 2, last paragraph of the translation).

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6. Claims 9-11 insofar as definite (in view of the 35 USC 112, 2nd paragraph rejections) are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 3010211 in view of JP 54-130451, as applied to claims 5-8 above, and further in view of JP 59-85378.

JP 3010211 (in view of JP 54-130451) disclose and/or suggest the features of claims 5-8. Neither JP 3010211 nor JP 54-130451 specifically discloses that only rare gas is used as the shielding gas.

However, JP 59-85378 discloses a TIG welding method that includes providing a rare gas alone (pure argon) as the shielding gas, such that the use of pure argon during welding obtains an excellent oxidation state of the penetration bead with no internal defect in the weld zone (abstract; pages 1-4 of translation; Table; and Figures 1-4).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the arc welding method disclosed by JP 3010211, by using the method of reducing stress by welding an additional layer while avoiding "heat history", or "alternation of heating and cooling", as taught by JP 54-130451, in order to avoid shrinkage of the deposited metal by the expansion due to transformation from austenite into martensite, thus reducing embrittlement and residual stress at the weld zone, and by further using pure argon as the shielding gas, as disclosed by JP 59-85378, in order to obtain an excellent oxidation state of the penetration bead with no internal defect in the weld zone (JP 59-85378; abstract; and Table).

Response to Arguments

7. The examiner acknowledges the applicants' amendment and replacement drawing sheets received by the USPTO on March 16, 2007. The replacement drawing sheets are approved by the examiner, and thus overcome prior objections to the drawings. In addition, the examiner has provided an updated initialed copy of the Information Disclosure Statement (IDS) of March 9, 2005 upon consideration of the applicants' submitted document JP 61-16230 B2 (no abstract or translation has been provided at this time), thus overcoming the prior objection to the IDS. The amendments overcome prior objections to the abstract, specification, and claims, as well as prior 35 USC 112, 2nd paragraph rejections. However, new 35 USC 112, 2nd paragraph rejections have been raised by the amendments to claims 5 and 6 (see above section 2). The applicants have cancelled non-elected claims 1-4. Claims 5-11 are currently under consideration in the application.

8. Applicants' arguments filed March 16, 2007 have been fully considered but they are not persuasive.

With regard to the applicants' remarks/arguments on pages 9-12, it is first noted that newly underlined portions provided within the 35 USC 103(a) rejections of above section 6 reflect the claim amendments and the applicants' clarifications of prior 35 USC 112, 2nd paragraph rejections, which have been addressed by the applicants on pages 9 and 10 of the remarks/arguments. Regarding the prior art rejections on pages 10-12 of the remarks, the examiner respectfully disagrees with the applicants' statement in the

paragraph bridging pages 10 and 11 that “the cited references fail to disclose or suggest each and every element of the claimed invention”. On page 11 of the remarks, the applicants have primarily addressed the alleged deficiencies of JP 54-130451 (rather than the primary reference JP 3010211 B1). Contrary to the applicants’ argument in the 1st full paragraph on page 11, JP 54-130451 discloses an additional welding step (which is lacking in JP 3010211 B1), as a multi-layer cladding/depositing process with mention of the “final layer” (see abstract and translation) and its transformation is discussed therein. Furthermore, in addressing the applicants’ argument in the 2nd paragraph on page 11, the limitation “room temperature or below” is disclosed by JP 54-130451 (see translation and newly underlined portions of above section 6). Regarding the “compressive residual stress” to be induced on the initial layer (last paragraph on page 11), the JP 54-130451 teachings of reduction in tensile stress (residual welding stress) that remains on the welded joint would apply to the final (cooled) welded product, not the stress induced during additional welding, which would necessarily involve inducing stress due to excess heat of the final layer deposited upon initial layer(s). The argument in the 1st paragraph of page 12 of the remarks (amended claim 6) is addressed in the underlined portions of the JP 3010211 B1 reference in above section 6. Regarding the JP 59-85378 reference addressed on page 12 of the remarks, the Table at the top of page 3 of the translation of JP 59-85378 shows the use of (argon) rare gas alone, which results in excellent oxidation state of the penetration bead with no internal defect in the weld zone (see Table).

Conclusion

9. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kevin P. Kerns whose telephone number is (571) 272-1178. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin P. Kerns *Kevin Kerns 4/19/07*
Primary Examiner
Art Unit 1725

KPK
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April 19, 2007